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The EXTENSION ANIMAL HUSBANDMAN

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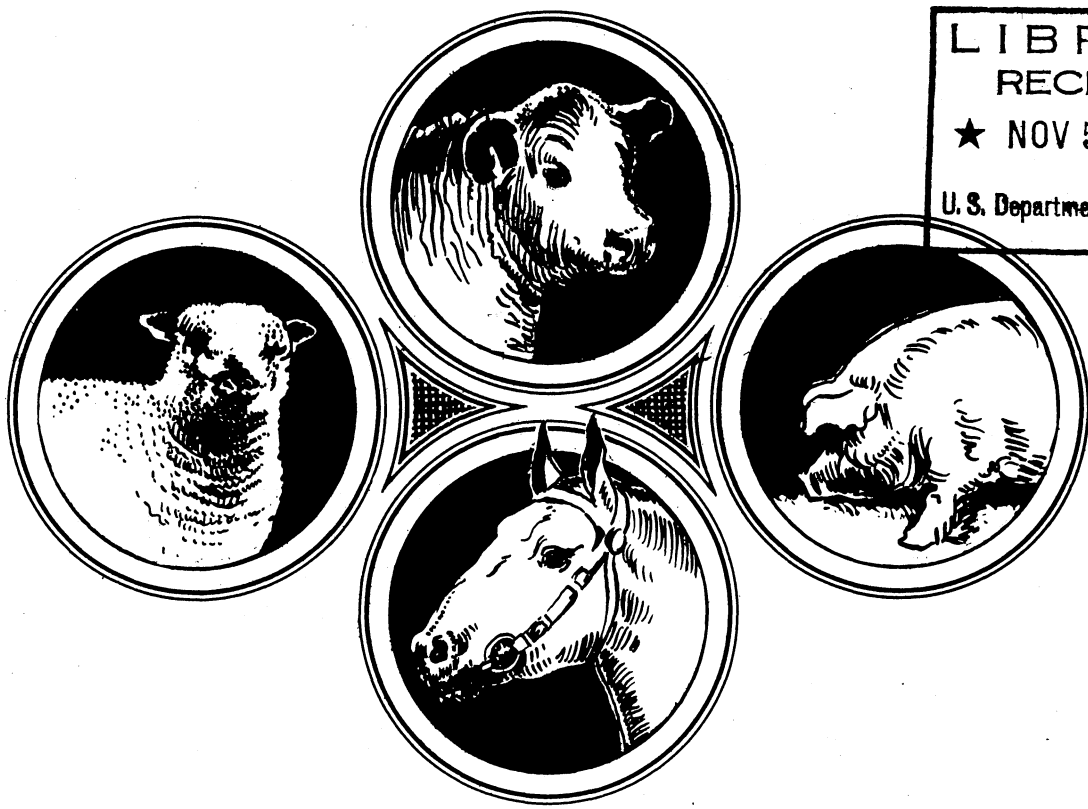

UNITED STATES DEPARTMENT
OF AGRICULTURE
WASHINGTON,
D.C.

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THE EXTENSION ANIMAL HUSBANDMAN

Issued quarterly by the Bureau of Animal Industry
and Extension Service, Cooperating.
C. D. Lowe, Senior Extension Animal Husbandman,
K. F. Warner, Senior Extension Meat Specialist.

Serial No. 63 --September 1941

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PROBLEMS IN ANIMAL BREEDING

By H. O. Hetzer, Associate Animal Husbandman,
Swine Investigations, Beltsville Research Center.

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Animal breeders are confronted with two major problems, namely the evaluation of the relative breeding value of different strains or of individual animals with respect to their most important qualities as farm animals, and second, the choice of the systems of breeding which will produce the most rapid improvement in those particular qualities.

Improvement of such characters as milk production, rate of growth, efficiency of feed utilization, quality of wool, quality of carcass, egg production and many others is complicated by the fact that genetically they may be determined by the most diverse means, operating physiologically in a great variety of ways. Thus the total size of an organism may be under the control of only a few genes. On the other hand, many genes may cooperate to determine a character. Physiologically, the effect of some genes may be direct as in the case of those affecting cell size, or it may be of a more indirect kind. For example, genes controlling the development of ductless glands, may modify total body size. Furthermore, not all genes are equally well balanced against one another when in the presence of some other genes, for their effect on the characters for which they are responsible may vary considerably depending on whether or not certain other genes also are present.

Improvement of the characters of interest to breeders is further complicated by the fact that most of them are readily influenced by environmental conditions. There is general agreement, in fact, that the actual differences in the environments under which they developed and only to a relatively small degree by the genes controlling these characters.

Because of the deceiving effects of environmental conditions, and in view of the genetic complexity of most productive characters it follows that selective breeding when practiced only on the basis of outward appearance or individual performance cannot be expected to be very effective unless attention also is paid to the individual's pedigree, the performance of its progeny, or the performance of other close relatives.

The most efficient breeding system to be followed will in turn be determined by the extent to which variations in the different characters are hereditary or environmental. Consequently it is usually necessary to know something about the degree of heritability of a trait before choosing the breeding system which will most rapidly

improve that particular trait. As one might expect, there is no one simple estimate for the degree of heritability of all traits in the same population or the same trait in all populations. In order to arrive at fairly reliable estimates or progress to be expected from selection, it would seem desirable, therefore, to explore this problem by studying as many populations as may reasonably be expected to yield answers applicable to a variety of different herbs.

Frequently the most useful measure for estimating heritability is a direct correlation of that character between closely related animals. Correlations between different kinds of relatives, however, do not always indicate whether a character is highly or only slightly hereditary. There are four major reasons for discrepancies between resemblance between relatives and degree of heritability. First, there are always sampling errors which may or may not be very important depending on the amount of data available for study. Second, the mating system may deviate from random mating to an extent for which it may be difficult to make proper allowance. Third, variations due to dominance or non-additive interactions of genes which are not allelic to each other may cause the genotype as a whole actually to function in a way distinctly different from the sum of the average separate effects of its constituent genes. Discrepancies of this nature generally result in a lower correlation between relatives than in cases where dominance and epistatic gene effects are of minor importance. The fourth and usually the most important reason for bias between outward resemblance of relatives and heritability is that certain kinds of relatives generally are more apt to be exposed to the same kinds of environment than individuals chosen at random from the same population. The most important consequence of this is that even when dealing with traits which are only slightly hereditary, we may obtain a higher or lower correlation between relatives than one would expect for characters only slightly affected by environmental conditions.

In this connection, it is of interest to note that there usually is a higher correlation among maternal than among paternal sibs. The reason here is that since maternal sibs develop in the same uterus and usually suckle the same dam, they tend to be more nearly affected in the same direction by peculiarities in pre-natal or pre-weaning environment than would be the case among paternal half sibs. Analogous situations tend to prevail among full sibs as compared with half sibs or among half sibs as compared with the resemblance between parents and offspring.

Despite the fact that there is no entirely satisfactory way for making proper allowance for the contribution of the above factors to the correlations between relatives, it is satisfying to note that we now have fairly dependable estimates for the degree of heritability

of various characteristics of economic importance in the different classes of livestock. From the practical standpoint, the main value to be attached to such estimates is that they enable us to obtain some idea of the progress that may be expected by retaining only offspring of parents selected because of high productivity. Recent investigations at the Beltsville Research Center, for instance, have shown that among the Chester White swine kept at that station, the average correlation for number of pigs farrowed per litter was 0.13 between litters from the same sow.

Now if heredity were the only thing which tended to make the records of the same sow alike, 13 percent of the variance in litter size could be construed as having been due to heredity. While this figure is highly tentative as an accurate estimate for the degree of heritability of litter size, it probably is not far from being a maximum value. Accepting 13 percent as a maximum approximation, the practical consequence of this value would be that if the sows selected as parents for the next generation averaged 2.5 pigs above the average for the generation in which they were born and their mates were equally superior, then their daughters would average 13 percent of 2.5 or about 0.3 of a pig per litter above this same level.

Let us suppose now that we have some idea of the heritability of a trait, including the importance of environmental variability, which system of breeding will bring about most rapid improvement? As already indicated, the choice of an efficient breeding system is largely determined by the degree of heritability of the productive characters for which improvement is sought, for a breeding program successful for characters where variability is largely genetic, may be relatively unsuccessful for characters readily modified by environmental conditions. In general, the best method indicated for characteristics which are highly hereditary is mass selection, based primarily on the individuals' own performance with little regard for pedigree, progeny test, or inbreeding. On the other hand, if heritability is low, the best step generally indicated would be to make considerable use of pedigree as well as of progeny tests combined with inbreeding.

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AMERICAN SOCIETY OF ANIMAL PRODUCTION

The 34th annual meeting of the American Society of Animal Production will be held at the Sherman Hotel, Chicago, Ill., November 28-30, which are the opening dates of the International Live Stock Exposition. Grover B. Hill, Assistant Secretary of Agriculture, will headline the speakers appearing in the extension section and the entire program will be of interest to extension workers.

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RANGE SHEEP IMPROVEMENT IN NEW MEXICO

By Geo. F. Ellis, Extension Animal Husbandman,
New Mexico College of Agriculture

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Improvement in wool production quickly and economically has been the object of a sheep culling program which has proved popular with New Mexico sheepmen. The system has been worked out by the experiment station and the extension service, and is the result of four years' experience. During these four years, a number of different methods have been tried, and the good parts of them have been combined in the present system.

In New Mexico the sheep business is strictly a range enterprise. It is necessary to have a type of sheep that herds easily and that can stand up under severe weather conditions. The fine-wool breeds have proved their superiority in this respect, and sheepmen have found from long experience that they must get good wool production or soon go out of the sheep business. New Mexico ranks far behind many other States in pounds of wool per sheep. For this reason much effort has been expended in the last few years to assist the sheepmen in improving their wool production.

The idea of the program is not a new one. It is based on the classification of both ewes and rams so that the best of each can be mated for the production of ewe lambs which will be used for replacement purposes. The only thing new about the New Mexico system of culling is the way in which the good wool producers are found. The project was begun several years ago with the principal emphasis placed on securing information about the shrinkage of the wool. The idea was to help the growers market their wool more intelligently. This information proved helpful and developed a wide interest so that the project became very popular. Still it was found that wool buyers were very reluctant to accept shrinkage figures obtained through the tests. As data began to accumulate two facts became apparent. The first was that there is a great deal of variation in fleece weights within any herd of sheep. The other one was that there is a direct relation between length of staple and production of clean wool per sheep. These two facts have become the basis of the present program of culling.

The ease with which the program has been made popular among the sheepmen of the State is due largely to the support of the president of the New Mexico Wool Growers' Association. He became interested in the project very early and has supported it whole heartedly. Experiment station and extension workers have appeared on the programs

of all of the meetings of the association the last three years, and the extension animal husbandman has been put in charge of the wool show and exhibit at the annual convention of the association. Through this exhibit it has been possible to illustrate the results being obtained in the culling program. This man has also offered the use of his flock for testing out the culling methods and has cooperated fully in every way. The importance of culling and the feasibility of the present system have been emphasized through a series of meetings conducted each spring with the sheepmen throughout the State.

The variation in fleece weight offered an opportunity for selecting the superior ewes and rams. After about 72,000 sheep had been tested, it was found that fleece weights varied from 5 to 15 pounds. It was also found that the long-wooled sheep produced more pounds of clean wool. Records covering the 72,000 head in the herds worked last year showed that ewes which had combing, or staple wool produced 3.55 pounds of clean wool per head; the French combing ewes produced 2.93 pounds; and the ewes which had clothing wool averaged only 2.06 pounds. The shrinkage increased as the wool got shorter. In view of these facts, the present system was developed to cull sheep on two factors, namely; length of wool and weight of the fleece.

In culling a flock, the sheep are first placed in a long narrow chute, the longer the better, and the wool on each sheep is quickly examined. This is done by opening it at a spot about two inches behind the hip bone. All the ewes which have wool two inches long or longer are then marked on the head with chalk, indicating that they are satisfactory for length of wool. Those which have wool shorter than this are given a different mark. Sometimes the owner wishes to cull his flock into good, medium, and poor groups. In this case the mediums are marked on the back, and the extremely poor, or short-wooled ewes, are marked on the rump. If the owner wants the herd cut only two ways, the mark on the back is eliminated. In either case, ewes must have wool at least two inches long to qualify for the head mark.

The sheep are then run through a cutting chute, and each grade is separated according to the mark which it has been given. The grades are then sheared separately. As the shearing is done, each fleece is weighed, and the sheep are again marked according to fleece weight. Those which do not shear up to a desired weight determined in advance, are marked as medium or poor, depending on the weight, and are put back into their respective grades.

This system requires two record keepers to read the scales and record the fleece weights, one working at each end of the sacking rack. Most shearing outfits used in New Mexico have 14 drops.

For a plant this size two men are required to work on each side of the shearing outfit, to watch the ewes as they are turned loose until their fleeces are weighed. These men then mark the sheep according to a signal given by the record keeper. After the sheep are turned out of the shearing shed, they are given distinguishing paint marks to enable the owner to tell which grade they belong in. Since the ewes have lambs at shearing time, it is impossible to separate them into different grades at that time. This is done before breeding time in the fall.

At the time the fleeces are weighed, hand samples are taken from every tenth one which comes to the scales. These samples are taken in the regular way, recommended by the U. S. Agricultural Marketing Service, and each of them is put individually into a small paper bag. On this bag is written the name or number of the herd from which the sheep came and the weight of the fleece. These samples are later graded in the laboratory and combined into composite samples on which shrinkage tests are made. A complete report is prepared and sent to the breeder showing the variation of fleece weights, production of clean wool by classes of sheep, and the shrinkage of the wool clip. The amount of wool in each different grade is also shown.

If the system is to be effective, it is important that the rams be culled exactly the same as the ewes. The only exception is that the fleece weight of the rams must be higher in order for them to qualify as good. The owner must follow up the work done by keeping the ewes marked so that they can be identified, and by separating the best ewes at breeding time and putting them with the best rams. From this mating ewe lambs are produced which are used for replacement. These ewe lambs have to be culled later, but the percentage of culls has been found to be rather small. This is well illustrated by the yearlings from one herd this year which was first culled at the beginning of the project. Last year before the culling had had time to show results the yearling herd contained only 51 percent of sheep which would qualify as good. This year it contained 88 percent good ones, and the average fleece weight had increased from 7.03 pounds to 8.15 pounds.

On one large herd of sheep which was culled this year it was found that the good ewes averaged $4.26 worth of wool per head; the medium ewes averaged $3.43; while the poor ones produced wool worth only $2.72 per head. On another flock where the sheep were classified as good and poor, the good ones averaged $3.65 worth of wool per head, while the poor ones averaged $2.65. On still another herd, where there were 3,188 good ewes, they averaged $3.41 per head. In the medium group which contained 3,535 sheep the average was $2.76, while in the poor flock, which contained 3,568 sheep, the average was only $2.27 per head. It did not take this owner long to figure out that he was losing $6,389 every year because all his sheep were not good enough to come in the

good grade. He plans to sell all the poor sheep immediately and will dispose of the medium ones as quickly as his management plan will permit.

The system is so simple that a great deal of experience is not necessary to do a satisfactory job. Whenever a man's sheep are culled an effort is made to get him to do a large part of the work himself so that he will be able to do it in the future. However, once the project is started with a man, it is best to continue with him at least three years as the figures which are accumulated serve as a check on the effectiveness of the work. One of the principal questions arising in New Mexico is how to meet the demands of growers for this type of service.

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PERSONNEL NOTES

Georgia

Ralph E. Davis, extension animal husbandman at the University of Georgia, has been succeeded by W. S. Rice of the resident teaching staff of the same institution.

Kentucky

E. S. Good, who was retired for age as head of the animal husbandry group at the University of Kentucky on July 1, has been caring for some of Wayland Rhoads' beef cattle field work while Mr. Rhoads is on active duty in the Remount Service of the U. S. Army.

Maryland

J. M. Vial, extension animal husbandman, judged draft horses at the recent State fairs in Ohio, Indiana and New Jersey. J. B. Outhouse, assistant extension animal husbandman, acted as consulting judge to Dean W. L. Blizzard in the beef cattle classes at the recent Maryland State Fair.

Ohio

L. P. McCann, extension animal husbandman, judged the Hereford cattle at the recent Ohio State Fair.

Pennsylvania

W. B. Connell, L. C. Madison and C. A. Burge, animal husbandry extension specialists at the Pennsylvania State College attended the National Percheron Horse Conference held at Frederick, Md., in July. J. M. Vial and J. B. Outhouse of the Maryland extension service also were present.

Washington

Walter Tolman, former assistant State extension agent in animal husbandry in Nebraska has been appointed extension animal husbandman at the Washington State College to succeed Con S. Maddox, deceased.

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A RANGE FORAGE PROJECT

By E. P. Orcutt, Livestock Specialist,
Montana Extension Service.

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"More than thirty million acres of Montana range lands, exclusive of National Forests, have been examined for carrying capacity within the last few years. These examinations offer much valuable information with respect to densities, species, and the current carrying capacities. They are incomplete as concerns factual carrying capacities because palatabilities and forage-acre allowances are at least partly arbitrary. The forage-acre allowance is the least factual because it has been a fixed figure over a large portion of the State. Representing volume of production, it should fluctuate with species, rainfall, soil, exposure, altitude, and possibly other factors.

"A strong movement toward conservation has influenced the recent establishment of carrying capacities so that they are 'minima'. The period of production in which they were made is also a contributing factor to the same end. In spite of the probability that past grazing has been based on maximum carrying capacities, perhaps since its beginning in the West, neither the land-owner nor the grazier can afford to continue on either this maximum of past use or the minimum as established by range examination.

"What benefits will derive from careful, accurate collection of data on production of Montana range feed? There are four which seem paramount. (1) Range-land tenure can be established on a firm foundation. This applies to taxation, ownership, and lease. (2) The rangeman can hold his numbers of breeding animals to his average carrying capacity with expectation of fewer occasions of drought-liquidation than in the past. (While average carrying capacities are unknown, the tendency to increase animal numbers with favorable production-years cannot be avoided). (3) With the whole complex process of range forage production a matter of factual record, improvement of both its quantity and quality could possibly result. (4) As the record of actual forage production lengthens in period, so its value will increase just as in the instances of rainfall or snowfall records, or with wheat statistics.

"In brief, the whole purpose is assembling facts concerning one of Montana's most valuable resources, native grass, and stabilizing her second greatest industry, range livestock production.

"Objects

1. To further educate graziers in the processes and degrees of range production and use.

2. To establish an average carrying capacity for Montana range lands.

3. To limit stocking rates of breeding animals to these average carrying capacities.

"Procedure

1. General

Obtain the cooperation of counties, grazing districts, and individuals over the State for the beginning and continuation of records of annual production of range forage, actual grazing use, composition and density and changes thereof, and percentage of utilization.

2. Detail

A definite set of records and processes must be established. They are as follows:

I. Records of annual production
   1. Portable check plots.
   2. Measurement records of height-growth.

II. Record of annual use
   1. Animal months (or days) record of actual grazing use.
   2. Record of pasture-units.

III. Establishment of percentage of utilization at end of grazing (Lommasson method)

IV. Permanent density transects (optional)."

The above quotation is taken directly from a project prepared for field application by Montana county agents. The subject matter continues from this point with instructions for establishing check plots, measuring height growth, recording use, and establishing density transects. The actual establishment of the percentage of utilization is done by the livestock specialist, because the "Lommasson method" is a technical approach devised by our senior range examiner of the Forest Service. Some field training is necessary before results are uniform and the opportunity has not yet arisen to furnish the county agents this training.

The principal purposes of the range forage project are education and demonstration. County agents are establishing it in typical areas through the cooperation of range operators. As records are obtained the information will be supplied to neighboring operators, and

tours and field days will be held so that other rangemen may become familiar with measured annual production, and use, in their locality.

A secondary purpose of considerable importance is the record of annual production of native range forage that can be established under reasonably satisfactory controls.

This range forage project has been "in the mill" for 4 years and the field application is still introductory. It is anticipated that another 5 years must pass before accomplishments and results can be definitely reported. What can be claimed at this time is that the range forage project offers contact between county extension men and operating rangemen, toward the improvement of the programs and relations of both.

Copies of the complete project, including forms, may be obtained by communicating with the author at Bozeman, Montana.

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FROZEN FOOD LOCKER PLANTS

	1941	1940	1939	1938
Number of States reporting locker plants	45	44	38	33
Total number of plants	3,623	2,870	1,861	1,269

The July, 1941, count of locker plants by States:

Alabama 19	Maine 0	Ohio 74
Arizona 1	Maryland 5	Oklahoma 93
Arkansas 11	Massachusetts .. 3	Oregon 275
California ...120	Michigan 80	Pennsylvania .. 35
Colorado 49	Minnesota 325	Rhode Island .. 0
Connecticut .. 1	Mississippi 23	South Carolina. 2
Delaware 1	Missouri 55	South Dakota ..110
Florida 1	Montana 60	Tennessee..... 27
Georgia 8	Nebraska 190	Texas 146
Idaho 100	Nevada 0	Utah 45
Illinois 221	New Hampshire .. 1	Vermont 3
Indiana 63	New Jersey 2	Virginia 7
Iowa 475	New Mexico 1	Washington 347
Kansas 190	New York 20	West Virginia.. 1
Kentucky 4	North Carolina.. 4	Wisconsin 335
Louisiana 7	North Dakota ...60	Wyoming 23

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CORRECTION, PLEASE

In Table 3, on page 3 of the last issue of this publication an error occurred. The last line of figures at the bottom of the page, reading from left to right, should be 7, 28.1, 23.3, and 48.6. Please make correction in your copy.

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1941 ACTIVITIES IN BEEF CATTLE PROGRAM IN ARKANSAS

By M. M. Muldrow, Extension Animal Husbandman,
Arkansas Agricultural Extension Service.

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Feeder Calf Production:

To emphasize further the importance and advantage of the use of land in grass and roughage for the production of beef, county agents were asked to obtain at least one record of factors influencing income per acre from the production of feeder calves in 1941. More than one record will be obtained from some counties. The summarized information from similar areas will indicate the possible return per acre from land in grass and roughage. The record form furnished agents is given below:

Record of Factors Influencing Income Per Acre
From Production of Feeder Calves

Demonstration: Production of Feeder Calves
Object: To determine per acre income through use of land in production of feeder calves
Name and Address of Demonstrator: _____
County: _____

Number of cows for 1941 season .....
Value of cows per head, January 1, 1941 .....$
Type of bull used: Excellent_____ Good_____Medium _____
Number of calves born in:

January	_____	Other months:	
February	_____	_____	_____
March	_____	_____	_____
April	_____	_____	_____

Number of calves raised to weaning age .....
Number of acres of cropland pasture, 1941 .....
Annual maintenance cost on pasture, 1941 .....$
Number of acres in hay to provide winter feed for 1940-41 season .....
Number of acres in silage to provide winter feed for 1940-41 season .....
Total wintering costs for 1940-41 season .....$
Amount received from calves sold .....$
Average price received per head .....$
Number of calves on hand October 1, 1941 .....
Value of calves on hand October 1, 1941 .....$
Per acre income .....$
(Gross income divided by number of acres used in pasture and production of roughage).

Emphasis is given to the feeder-calf production program because of the greater adaptability throughout the State. In some years some finishing will be done on some farms and in a few areas grain will be available for feeding most every year. In such areas 4-H club members are pointing the way by their winter feeding of baby beeves. Last winter in Mississippi County, the largest cotton producing county in the State, 125 calves were fed and at the end of the feeding period, a show and sale was held in the county.

The feeder-calf program has been under way in the State for a number of years. The introduction of purebred sires was one of the first steps in the program and the record of purebred beef bulls reported by county agents shows 138 head for 1931 with a gradual steady increase to 1,274 head for 1940.

January, February, and March calving dates are emphasized. Premium lists at county and district shows for beef cattle have been changed to include classifications for feeder calves in groups and individual entries. In most cases, the individual entries are shown by 4-H and FFA members.

Breeder Activities:

Eight years ago the Extension Service initiated a movement for the organization of a State-wide beef cattlemen's association. Breeders of purebred cattle and those interested in the feeder-calf-production program in a commercial way responded in such manner that an annual meeting in December has been held since 1934 at which problems in the field and programs for development have been discussed. The activity taken by the association in connection with the formation of county anti-cattle theft organizations has reduced the trouble from that source.

This year breeders of purebred cattle held separate sessions during the afternoon of the annual meeting. As a result, the Shorthorn group sponsored a Shorthorn cattle sale in June through which 25 head of yearling Shorthorn bulls were brought in from breeders outside the State and distributed through the sale.

The Hereford breeders for the past several years have been working together in holding purebred sales and in sponsoring the Hereford show at the Arkansas Livestock Show. Five Hereford breeders showed complete herds in 1940.

The Aberdeen-Angus group sponsored its first annual Aberdeen-Angus field day on August 15 on the farm of T. R. Jones, Aberdeen-Angus breeder of Tuckerman. Breeders from 12 counties had the opportunity of listening to a discussion of type by W. M. Barton, fieldman of the American Aberdeen-Angus Breeders' Association, and later placing

classes of Aberdeen-Angus cattle including one class of cows, one class of bulls, and one class of heifers furnished by Mr. Jones. After each class was placed they were discussed by Mr. Barton and Mr. Sloan, president of the State association. Free barbecue was furnished by the northeastern Arkansas breeders to the visiting breeders from over the State. During the afternoon, Dr. Warren Gifford, head of the Department of Animal Industry, College of Agriculture, University of Arkansas, discussed breeding problems. This was followed by a general discussion on the use of Aberdeen-Angus cattle in commercial herds for the production of feeder calves.

Following the program, at a business session of the members of the Arkansas Aberdeen-Angus Breeders' Association called by President L. A. Sloan, November 6 was set as the date of a sale to be held by the breeders with a consignment of 60 head of cattle.

Livestock Judging School:

To meet the demand for livestock judges at community and county fairs, plans were worked out with Dr. Gifford by the extension dairyman and the extension animal husbandman for holding a 3-day livestock judging school for adults at the University on June 23, 24, and 25. Ninety adults including key breeders of beef cattle, dairy cattle, hogs, and sheep, and a representative group of county agents, Farm Security supervisors, and vocational agriculture instructors took part in the 3-day judging school.

Prof. E. A. Trowbridge, chairman of the Animal Husbandry Department, University of Missouri, who was teaching a graduate course in animal husbandry at the University of Arkansas during the summer, assisted with the judging school. His discussion of judging and relation of personal experiences at fairs and shows, including horse shows, held the interest of the group from the start and his interesting and complete analysis of each class of beef cattle, horses, mules, and sheep drew much favorable comment from those in attendance at the school.

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MACHINES

* * * just as we cannot attribute social evils to the inanimate machine, neither should we attribute to the machine some mysterious capacity to mold and develop our social life. The actual forces that determine the patterns of our social institutions are more likely to be human than mechanical in character. Whether or not machines are to do the wonderful things claimed for them depends upon how individuals and groups of individuals make them, how they sell them, how they manage them, and, finally, how they distribute their products. --C.H. Hamilton
(Land Policy Review, USDA, BAE, March, 1941)

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ONE HUNDRED POUND LAMB CREDIT PER HUNDRED POUND EWE WEIGHT

By E. L. Benton,
Extension Specialist in Animal Husbandry,
Michigan State College.

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This title is the accomplishment of only eight Michigan flockmasters in 1940. To the sheep owner it offers a goal reached by few, just as with draft horsemen who measure the pull on the dynamometer, few teams pull their own weight.

This sheep project, supervised by the animal husbandry extension service of Michigan State College is a measure of production efficiency which includes the annual wool clip in addition to lamb weight produced in 135 days. This project is developed as an improvement over the old Wolverine lamb production contest which measured only pounds of lamb produced per ewe in 135 days. The old project saw the Oxford breed winning all the honors. The new project sees the honors equally distributed among breeders of large and small sheep as well as between medium-wool and fine-wool flocks.

Flocks are enrolled during the winter and spring. After lambing dates are established, a weighing date for the lambs is determined 135 days from the average birth date. To these lamb weights are added the total pounds of wool produced by the ewe flock, (multiplied by three). Wool weights tripled are then credited as lamb weight. This total divided by the annual average weight of the ewes in turn gives the production per 100 pounds of ewes in the flock.

In 1940 Orson Sober of Fowlerville, with his purebred Shropshires that dropped 159 percent lamb crop, made his lambs weigh 90 pounds at 135 days with a credit per 100-pound ewe of 112.7 pounds. Seven Oxford breeders in the Thumb area produced over 100 pounds of lamb credit per 100 pounds of ewes. These men had lamb drops as high as 197 percent and shearing weights up to 10-1/2 pounds.

In 1941 some of the flocks made the following reports. Harry Wright of Arenac County, with his flock of 26 Oxford ewes, produced 3,877 pounds of lamb and 286 pounds of wool, making his credit 105 pounds per 100 pounds of ewe. Emily Johnson Fox of Cass County with her flock of 50 Corriedale ewes, 26 of which are registered, produced 500 pounds of wool and 4,830 pounds of lamb.

The average ewe weight of 125 pounds gives this flock a credit of 101 pounds per 100 pounds of ewe. Flock owners who make these outstanding records are each year awarded a medal by the Michigan Pure Bred Sheep Breeders' Association. Membership in this hall of fame for Michigan's sheepmen will be reached only by those following the most carefully handled management program for 12 months of the year.

Practices gleaned from records on these farms show the following to be in use.

1. A high percentage of lambs is dropped and raised. To do this ewes must be maintained at a thrifty level and "flushed" at breeding time by improved feed or pasture conditions.

2. Individual lamb weights at 135 days average from 75 pounds and up. Grain is always available in a creep or trough with a constant supply of succulent pasture such as alfalfa and smooth brome grass, or oats and rape or sudan grass.

3. Worm control was accomplished by use of copper sulfate and nicotine sulfate drench. Kamala was used for some persistent tapeworm cases.

4. Shearing weights were all over 9 pounds. Year-round thriftiness here is an important factor.

5. Condition of the ewes was neither excessively fat nor thin. Exercise daily and open shelter seem to be factors that tended toward strong lambs delivered with minimum difficulty.

6. Flock rams were all purebreds carefully selected for the thick, smooth, compact, meaty, rapid-maturing individuals with good fleeces.

7. Cash returns in 1940, on commercial basis with 9-cent lambs show the 10 highest flocks to have made $13.50 per 150 pounds of ewe.

8. Cash returns for cultivated pastures such as alfalfa and smooth brome grass mixture show ability to carry 3 to 5 ewes and their lambs per acre from May 15 through the pasture season until weaning time. Two hundred and fifty to 300 pounds of lamb produced per acre at the 9-cent average shows return which makes pasturing profitable at times when labor is scarce and lamb prices are good.

9. The late March and April lambs on most farms seem to make the

most economical pasture gains and get to market around Labor Day before prices hit the skids too badly.

The largest problem in connection with this project is to get the enrollments. The second problem is to get the lamb weights after weighing dates are established. County agricultural agents of Michigan render a big service in this field, but are unable with all their various duties to give a great deal of help with the project. Owners of the highest flocks each year are invited to exhibit three ewe lambs at the Annual Farmers' Week Show at Michigan State College. Proper publicity centers around this activity with methods these people have used in making their accomplishment. One hundred and thirty-one enrolled flocks with 65 percent completing the project seems unsatisfactory.

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EXTENSION TEACHING

Our teaching must be simplified to only partially percolate from the upper age levels into the lower levels or groups. The teaching plan, the tools with which we do the teaching, must be simplified. We should keep in mind that in a democracy everybody is entitled to something even if it is a mere service. I am not inclined to believe that we should seriously consider the matter of making everyone a thinker. Let us keep in mind that we all do a great many things from suggestion, things that are mere skills, without so much of thinking. We are farther ahead in the game as a whole if we teach even better practices as skills without even knowing why, than we are to let people go on and on without any attempt to change a poor practice into a good one, or to substitute a better one for a poor one. Idealism is well to keep in mind, but it is well also to step down several rounds on the mental ladder and reach a hand to those who are just coming up. Our methods should be determined by the mental age groups to be dealt with. We need not be a diagnostician of individuals. Let us keep in mind that the psychologists of today have their facts about as well in hand as the medical man, the lawyer, the economist, the sociologist, or any other subject-matter group. A good principle to keep in mind is to teach just so much of the truth as can be accepted and await another day to teach the fuller truth. --A. B. Graham

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"Life is hardly respectable if it has no generous task, no duties or affections that constitute a necessity of existence. Every man's task is his life preserver." --Ralph Waldo Emerson

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"Teach a man, you write on water;
Teach a boy, you carve on marble."

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RAM TRUCK SALES IN NORTH DAKOTA

By H. B. McLachlin,
Extension Animal Husbandman,
North Dakota Agricultural College.

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Truck sales have been held the past two seasons in North Dakota and plans are being made for another series of sales for 1941. This is a joint project between this specialist and the extension agent in marketing with cooperation secured from the district supervisors and the county agents. The agent in marketing was in charge of the general supervising, securing the cooperation of the other departments.

The demand for such a sales program was warranted through definite need of surplus rams grown in eastern North Dakota transferred to the central and western portions, as well as to make available quality rams within the breeding area.

In preparing for the sales, each purebred sheep breeder of the State, who might be interested in consigning rams to the truck project, was asked to submit a list giving the number of rams he had for sale together with the breed and age. This gave an indication of the number of rams that might be available for the sales. A total of 700 rams were listed available for the ram truck. Two truck routes were then worked out, one to cover the western half of the State, working from east to west, and then back through the central part, with the northern truck working the north half of the State east to west for the return. The schedule was so arranged that both trucks met at Watford City in order that the supply of rams from each truck might be redistributed and equalized. From then on, the sales of the two trucks were scheduled rather closely so that rams could be transferred from one truck to the other. One of the main difficulties in operating the ram truck is to have the quality of rams and the breed and age of rams wanted in certain communities. For the ram schedule for 1941 we may work our trucks from east to west covering all of the sale points in the various counties and finishing up in the western part of the State, thinking that the eastern breeders should secure their rams a little earlier in the season and as we go west the ranchers are more apt to have their demand filled closer to their breeding season.

The county agents of the counties in which sales were conducted made necessary local arrangements and advertising for the sales. Local facilities, sanitary sales yards, were provided by community and local organizations free of charge. The sales were also advertised by the State Extension News and radio announcements. One thousand sale bills were printed and distributed by the county agents.

Thirty-two sales were held in as many counties. Several of the sales were calculated to cover more than one county. The sale points were so selected that no sheepman would have to travel over 40 to 50 miles to secure a ram. Only purebred registered rams were carried on the truck. All rams consigned to the truck were approved by the sales manager as to quality and good breed characteristics.

Our main motive in sponsoring such a project as this was primarily to improve the flocks of sheep in North Dakota, also to make available to interested sheepmen purebred rams within their own localities. In addition to the rams brought in on the truck, the local purebred breeders at each sales point were permitted to offer purebred rams for sale. If their rams were not sold at this sale, quality rams were consigned to the truck, if approved by the sales manager.

The two truck sales were run concurrently, except that the south sale truck started two days earlier than the north truck, making it possible to establish a more uniform basis as to procedure and prices. The extension agent in marketing was in full charge of the northern route with the assistance of the district supervisors and a local sheep breeder operating the truck. The south truck was operated in the same manner with the extension animal husbandman in charge, having the assistance of the district supervisor and a sheep breeder operating the truck as well.

Each consignor is required to give a maximum and minimum price on his ram. This made it possible to adjust the price on certain rams if they did not move readily. All adjustments were made between sales and not during sales. Once the price was fixed on a ram, that held for the day. Cards were made out giving the sale price for that day and used by the various agents in charge. Branding fluid was used giving each ram a truck number, identifying the breed, price, and owner on the cards made out each day. Rams carried on the truck two or three days often took on a rather shabby appearance and blocking and grooming were necessary. Consequently, if the ram was carried on the truck any length of time, it was necessary to lower the price as his appearance diminished. However, most rams took on their regular bloom and condition the third or fourth day.

A good-quality mixed legume and western hay was the only feed used on the truck. Concentrated feeds were not used due to the facilities and possible chance of putting the rams off feed.

Each truck was started on its route with a diversified supply of rams. The common breeds in North Dakota are: Hampshire,

Shropshire, Oxford, Rambouillet and Corriedale, the latter two breeds being rather scarce in purebred flocks. Throughout the schedule, it was often necessary to bring rams in from a distance to give the buyers a sufficient supply to choose from. These rams were previously located and approved by the agent.

A central office was set up at the college and daily reports of the sales were made to the office. This report included the truck number given each ram, his registry number, breed, age, name and address of the consignor and the name and address of the buyer, and the purchase price. With each daily report was included a draft covering the total receipts of the day and the registry certificates of each ram sold. This made it possible for the ram truck central office to mail 75 percent of the sale price of each ram to the consignor after it was sold. The remaining 25 percent was retained until the total expenses of all the sales were determined. The expenses included the truck and trucker, feed and incidentals prorated among all of the consignors. This amount was $2.25 per ram. The balance was then delivered to the consignor after the transfer of registry had been completed.

At the completion of the sales, it was necessary to return a few rams that had not been sold. The following is a summary of the sales:

SUMMARY OF RAM SALES

October 7, 1940 to October 26, 1940

	No. of counties	No. of sales [1]	No. of rams sold from trucks	No. of other rams sold locally
October, 1940:	32	32	248	233

[1] Rams were also placed in ten counties in which no sales were held.

SUMMARY OF RAMS SOLD FROM TRUCK ACCORDING TO BREED AND AGE

	Lambs		Yearlings and Older	
Breed	No. sold	Ave. price	No. sold	Ave. price
Hampshire	73	$26.46	99	$31.70
Shropshire	7	21.93	43	27.01
Oxford	8	17.87	6	24.58
Southdown	-	-	-	-
Rambouillet	3	19.00	8	33.44
Cotswold	-	-	1	25.00

The extension animal husbandman made most of the preliminary arrangements for the sales, had general supervision of the sales, and was sales manager of the southern truck (truck No. 1). The extension marketing agent assisted in formulating plans, setting up general policies, working out necessary forms, and acted as sales manager of the northern truck (truck No. 2).

There was some criticism at the sale points toward the end of the schedule because the breeders around these points (mid-eastern) were not able to secure from the trucks the type and quality they were seeking. The trucks had just come through the deficit area and therefore it was not possible to have a sufficient supply of the better rams. For another year it may be best to try to schedule the sale points in such a manner that the trucks would move a little more north and south in their respective half of the State so that all sale points could be covered as the trucks move toward the west side of the State. All the sources of supply could thus be tapped as the trucks move westward. It sometimes happens that one truck may have accumulated a surplus of a certain breed. If the schedule can be properly arranged, the trucks would move toward the central part of the State at the same time which would make it possible for them to meet several times and adjust loads as they proceed westward. Unsold rams could be returned to the owners at certain previously arranged points on the return trip after the sales have been completed.

The demand for yearlings and two-year-old rams exceeds the supply. Consequently, it is necessary that they purchase ram lambs instead. It has been one of our main jobs to have the purebred breeders raise mature well-grown ram lambs that will give the most service to the commercial breeder. We also found that these well-grown ram lambs that were in good condition could stand the excess handling that occurs on a ram truck and consequently were the only type of young rams that were feasible to handle through our schedule.

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NO SUBSTITUTE FOR WORK

Some people have always believed that we can stop creating and live upon what has already been made. Fortunately, though, the wastrels and the drones, and the exploiters too, have been no more than minor impediments in the current of progress. The real wealth of this country isn't in the gains already made. It lies in the limitless values still to be established; in substances yet to be dug from the earth, drawn from the sea, taken from the forests; in scientific discoveries still to come from the laboratories; in the growth of businesses that demonstrate, by management and production, an ability to foster the common wealth. In developing these values there is no substitute for work. --Robert W. Woodruff

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Health is so necessary to all of the duties as well as the pleasures of life, that the crime of squandering it is equal to the folly. — Johnson

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BETTER CATTLE IN UTAH

By Harry H. Smith, Extension Animal Husbandman,
Utah State Agricultural College

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In the last issue of the Extension Animal Husbandman, J. J. Moxley of Kansas said, "A cattleman's profit comes from either pounds, price, or both." So the more pounds you have to sell and the higher the price, the more money you get. Price is certainly important, and the top price at any one time depends on the quality of the animal. At any time, the better the quality the higher the price per pound. Go out into the ranch country this fall when cattle are beginning to move to market, and you will find that the steer calves from one ranch are selling for 12 cents per pound, while the steer calves from the adjoining ranch are selling for only 11 cents per pound. The spread may be even wider.

Two years ago, the cattlemen of Utah started a concerted move to increase their income by improving the quality of their cattle. This movement received a lot of stimulus when one of the chain store organizations donated $2,000 to buy a good bull which was presented to the Utah Horse and Cattle Growers' Association. That bull, Advance Domino 3rd, 2837737, Grand Champion at the National Western at Denver in 1940, was turned over to the State Agricultural College, and is now being used on about 45 head of choice cows. The bulls from the college herd sired by Advance Domino 3rd will be loaned to cattlemen of the State. Fifteen or 20 bulls per year is only a drop in the bucket in relation to the number of bulls needed by the State, but the whole movement has had a great influence in making the cattlemen of the State "Better cattle minded," with the result that many of the ranchers are following practices of herd improvement which they had not been following heretofore. Many herds, with the help of the extension animal husbandman, are being systematically culled each fall. More attention is being given to winter feeding and care of the breeding herd, and many of the grade heifers from the best herds of the State and neighboring States, which have ordinarily been going to market, are being bought by our ranchmen to improve the quality of their herds. Also, many breeders have bought small numbers of purebred heifers, with the idea of breeding them to Advance Domino 3rd here at the college in the hope of producing a few good bulls for their own use.

When one visits a public stockyards, he is struck by the great number of scrub cattle which are being collected daily for our meat-consuming public, yet still one hears the question quite regularly, "Is there any danger of the purebred business being overdone." There is not, so long as quality is the "watchword;" but during the last few years when prices have been good, too many calves which would not have made even fair steers have been saved by our purebred breeders to be sold to go to the range. This is a very shortsighted policy and one which can be overcome only by properly educating the rangeman to the beneficial effect of better sires.

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RECENT PUBLICATIONS

(This list is limited to publications of interest to extension workers. In most cases copies are available from the institution or agency issuing them. Do not write to Washington, D. C., for other than U.S.D.A. publications.)

Federal

"Progress in Wool Shrinkage Research During Year 1940," by W. M. Buck and G. C. LeCompte - Agricultural Marketing Service, U.S.D.A., Washington, D.C. - 16-page mimeograph, June 1941.

"Trends in Production and Foreign Trade for Meats and Livestock in the United States," by Preston Richards - Bureau of Agricultural Economics, U.S.D.A., Washington, D.C. - pp. 63, March 1941 - Technical Bulletin 764.

"The Preparation and Use of Derris and Cube Washes for the Control of Cattle Grubs," by Dr. Marion Imes - Bureau of Animal Industry, U.S.D.A., Washington, D.C. - 3-page mimeograph - Nov. 1940.

"Relation of Diet of Swine to Development of Locomotor Incoordination Resulting from Nerve Degeneration," by N. R. Ellis and L. L. Madsen - Bureau of Animal Industry, U.S.D.A., Washington, D.C. - Reprint from Journal of Agricultural Research, Mar. 1941, pp. 15.

"Information on the Soft-Pork Problem," prepared by the Bureau of Animal Industry, U.S.D.A., Washington, D.C. - 14-page mimeograph, May 1941.

"A New Remedy for the Prevention and Treatment of Screwworm Infestations of Livestock," by Roy Melvin, et al. - Bureau of Entomology and Plant Quarantine, U.S.D.A., Washington, D.C. - 4-page mimeograph, May 1941.

"As We Go Home," by Reuben Brigham - Extension Service, U.S.D.A., Washington, D.C. - Extension Service Circular 361, June 1941, pp. 12.

"Extension Activities and Accomplishments, 1940," by Meredith C. Wilson and H. W. Porter - Extension Service, U.S.D.A., Washington, D.C. - Extension Service Circular 363, June 1941, pp. 22.

State

"Factors that Affect Sheep Income," by R. T. Burdick - Colorado Experiment Station Bulletin 467, May 1941, pp. 27, tables 20.

"Comparative Feeding Value of Silages Made From Napier Grass, Sorghum and Sugarcane," by A. L. Shealy, et al - Florida Experiment Station Technical Bulletin 358, May 1941, pp. 18.

"Phosphorus Needs for Fattening Steers," by W. M. Beeson - Idaho Experiment Station Circular No. 83, May 1941, pp. 6.

"The Phosphorus Requirement for Growing and Fattening Beef Steers," by W. M. Beeson, et al - Idaho Experiment Station Bulletin No. 240, May 1941, pp. 14.

"Effect of Pasture on Grade of Beef," by Sleeter Bull, et al - Illinois Experiment Station Bulletin 475, April 1941, pp. 30.

"A Homemade Electric-Fence Controller," by E.L. Hansen and C. W. Veach - Illinois Extension Service Circular 515, June 1941, pp. 8.

"Iowa Hog Producers and the National Defense Program," - Iowa Extension Service Pamphlet 7, May 1941.

"Calcium in the Nutrition of the Fattening Calf," by A. D. Weber, et al - Kansas Experiment Station Technical Bulletin 51, Dec. 1940, pp. 91, figs. 14.

"Pig Club Manual," edited by Nevels Pearson and V. A. Freeman - Michigan Extension Service Club Bulletin 5, May 1941, pp. 71, illus.

"Horse Costs in Michigan, 1937-39," by F. M. Atchley - Reprint from Michigan Agricultural Experiment Station Quarterly Bulletin, Vol. 23, No. 3, Feb. 1941, pp. 181-186.

"Livestock Auctions in Minnesota," by A. A. Dowell and Gerald Engelman - Minnesota Experiment Station Bulletin 352, June 1941, pp. 39, figs. 19.

"Pork Production," compiled by H. O. West - Mississippi Experiment Station Bulletin No. 351, Nov. 1940, pp. 139, figs. 41.

"Fattening Early and Late Lambs," by Albert J. Dyer and L. A. Weaver - Missouri Experiment Station Bulletin 425, Apr. 1941, pp. 16.

"Food for Defense - Pork," - Nebraska Extension Service leaflet, D. C. No. 1.

"Costs of Farm Power and Equipment," by J. P. Hertel and Paul Williamson - New York Experiment Station Bulletin 751, April 1941, figs. 11.

"Soybean Oil Meals for Pigs," by W. L. Robison - contained in Ohio Experiment Station Bimonthly Bulletin No. 209, Mar.-Apr. 1941, pp. 8.

"Levels of Supplementary Protein for Pigs on Pasture," by T. B. Keith, et al - Pennsylvania Experiment Station Bulletin 407, Apr. 1941, pp. 12, figs. 3.

"Alfalfa-Molasses Silage as a Roughage for Fattening Steers," by P. T. Ziegler, et al - Pennsylvania Experiment Station Bulletin 410, Apr. 1941, pp. 13, tables 11.

"Control of Vitamin A Deficiency in Feeding Beef Cattle," by George W. Barnes, et al - Texas Extension Service Circular C-171, 1941, pp. 8, figs. 4.

"Sudan Pasturage for Beef Production," by George W. Barnes, et al - Texas Extension Service Circular B-123, July 1941, pp. 11, figs. 6.

"Standards for Classifying Livestock," by Ralph W. Phillips - Utah Extension Service bulletin N. S. 112, pp. 35, figs. 36.

"Wool Scouring Tests in Utah," by Alma C. Esplin - Utah Experiment Station Bulletin 298, June 1941, pp. 24, figs. 4.

"Helminth Parasites in Sheep," by W. L. Threlkeld - Virginia Experiment Station Technical Bulletin 68, Feb. 1941, pp. 46, tables 10.

"Electric Pig and Lamb Brooders," by W. A. Junnila and H. G. McDonald - Washington Experiment Station Popular Bulletin No. 160, Jan. 1941, pp. 8, figs. 4.

"Produce Pork for National Defense," - Wisconsin Extension Service Special Circular, May 1941, pp. 4.

Other

"Live Stock Marketing Losses" (1940 Report of The National Live Stock Loss Prevention Board) and

"4-H Demonstrations on Live Stock Loss Prevention" - issued by National Live Stock Loss Prevention Board, 700 Exchange Bldg., Union Stock Yards, Chicago, Ill.

"The Frozen Food Industry," by Harry Carlton - a book published by The University of Tennessee Press, Box 4013, Knoxville, Tenn. - 196 pages, 6 x 9, 54 tables, charts, maps and curves, $2.00

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The science of husbandry is extremely profitable to those who understand it; but it brings the greatest trouble and misery upon those farmers who undertake it without knowledge. --Xenophon

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